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Phaeodactylium cymbisporum sp. nov. from the Brazilian Atlantic Forest

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Abstract — *Phaeodactylium cymbisporum,* collected on decaying leaves of an unidentified plant, is described and illustrated. The new species is characterized by polyblastic, sympodial extended conidiogenous cells that produce broad cymbiform, 3-septate, smooth, pale golden brown conidia. A key to *Phaeodactylium* species is provided.

Key words — conidial fungi, asexual fungi, systematics

Introduction

The genus *Phaeodactylium* was introduced by Agnihothrudu (1968) with *P. venkatesanum* as type species; subsequently, Ellis (1971) synonymised *P. venkatesanum* under *P. alpiniae* [≡ *Dactylium alpiniae* (Sawada 1928)]. *Phaeodactylium* is distinguished by distinct, single, mostly dichotomous branched conidiophores and polyblastic, denticulate, discrete, indeterminate conidiogenous cells with several sympodial extensions that produce solitary, acropleurogenous, clavate to narrowly ellipsoidal, euseptate, subhyaline or hyaline conidia.

During a mycological survey of microfungi associated with leaf litter in a Brazilian Atlantic forest, a conspicuous fungus was collected that is described here as a new *Phaeodactylium* species.

Materials & methods

Individual collections were placed in plastic bags, taken to the laboratory, and treated according to Castañeda (2005). Mounts were prepared in polyvinyl alcohol-glycerol (8 g PVA in 100 ml of water, plus 5 ml of glycerol) and in lactic acid (90%), and measurements were made at a magnification of ×1000 under a Nikon Eclipse Ni-U microscope with bright field optics, and photomicrographs were obtained using DIC optics with a Nikon DS-Fi2 camera. The holotype was deposited in the Herbarium of Universidade Federal de Pernambuco, Recife, Brazil (URM).

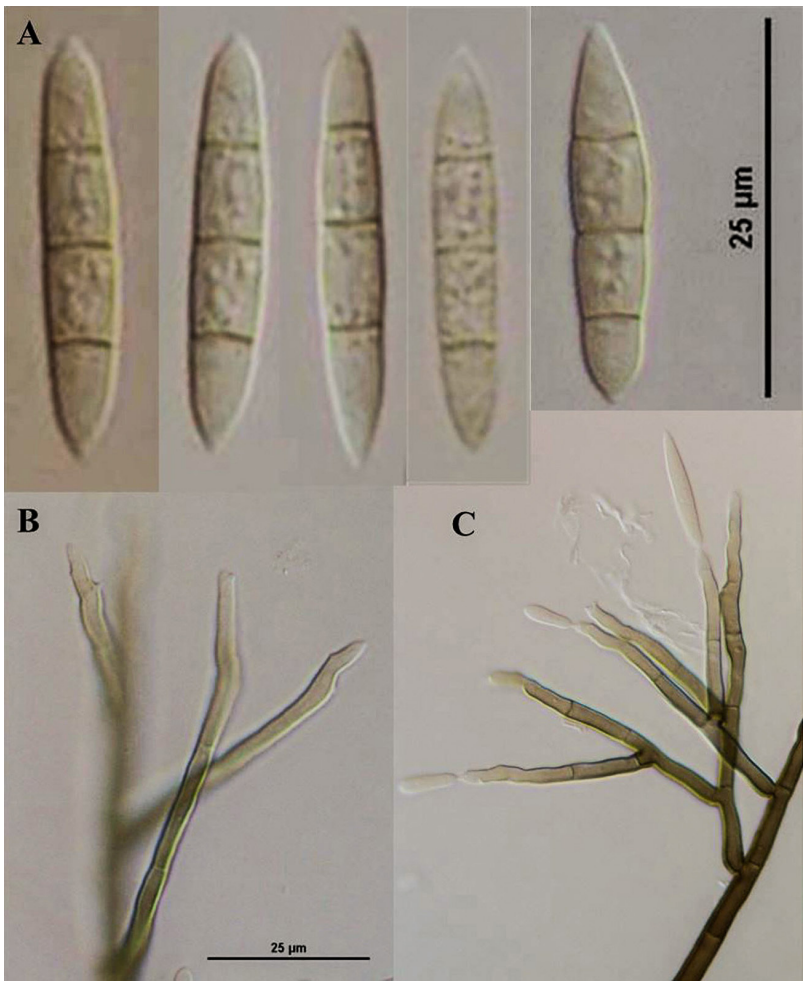

Fig. 1. *Phaeodactylium cymbisporum* (ex holotype URM 88250).
A. Conidia. B, C. Conidiogenous cells and young conidia.

Taxonomy

Phaeodactylium cymbisporum P.M.O. Costa , Malosso & R.F. Castañeda, **sp. nov.** Fig. 1
IndexFungorum IF 551860

Differs from all other *Phaeodactylium* species by its cymbiform, pale golden brown conidia.

Type Brazil, Pernambuco, Bonito, RPPN Mata da Chuva, 8°30′S 35°42′W, on decaying leaves of an unidentified plant, 7.XI.2015, coll. P.M.O. Costa (**Holotype**, URM 88250).

Etymology: Latin, *cymbisporum*, refers to the cymbiform conidial shape.

Colonies on the natural substrate, effuse, hairy, brown to dark brown. Mycelium superficial and immersed, composed of septate, branched, brown, smooth-walled hyphae, 2.5–4 µm diam. Conidiophores distinct, erect, straight or flexuous, cylindrical, dichotomously branched above, ≤15-septate, dark brown below, pale brown toward the apex, 250–400 × 7–10 µm, smooth. Conidiogenous cells polyblastic, denticulate, terminal, in branches incorporated, indeterminate with several sympodial extensions, brown to pale brown, 14–22 × 3 µm. Conidial secession schizolytic. Conidia solitary, acropleurogenous, cymbiform, 3-septate, pale golden brown, smooth, dry, 24–29 × 4–6 µm.

Notes: Among all *Phaeodactylium* species listed in Index Fungorum (2015) and discussed by Castañeda-Ruiz et al. (2009, 2012), Seifert et al. (2011), and Zhang et al. (2011), only *P. alpiniae* (Sawada) M. B. Ellis and *P. curvularioides* Matsush. are superficially similar to *P. cymbisporum* by producing 3-septate conidia. However, these species are clearly differentiated from *P. cymbisporum:* the conidia of *P. alpiniae* are shorter and wider (16–25 × 6–9 µm), ellipsoidal or clavate, and colorless or subhyaline (Ellis 1971) while those of *P. curvularioides* are shorter and wider (13–22 × 5–10 µm) and ovoid (erroneously as "obovoid"; Matsushima 1980) with brown central cells and pale brown or subhyaline end cells (Matsushima 1980).

Key to *Phaeodactylium* species

1. Conidia smooth-walled 2
   Conidia verruculose, obovoid, 1–2-septate, 14–23 × 4–6 µm, subhyaline ..... *P. stadleri**
2. Conidia 2-septate 3
   Conidia 3-septate 4
3. Conidia clavate, fusiform or narrowly ellipsoid, 10–14 × 2–3 µm, with brown central cell and pale brown or subhyaline end cells ..... *P. biseptatum**
   Conidia narrowly ellipsoidal to clavate, 15–20.5 × 5–7.5 µm, pale brown to brown. ..... *P. cephalotaxi**

4. Conidia cymbiform, 24–29 × 4–6 µm, pale golden brown ..... *P. cymbisporum*
   Conidia not cymbiform 5
5. Conidia narrowly ellipsoidal or clavate, 16–25 × 6–9 µm,
   colorless or subhyaline ..... *P. alpiniae**
   Conidia ovoid [not obovoid], 13–22 × 5–10 µm, with brown central cells
   and pale brown or subhyaline end cells ..... *P. curvularioides**

* Castañeda-Ruiz et al. (2009, 2012); Ellis (1971); Matsushima (1980); Zhang et al. (2011).

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